

TETRACAMPOS WEDL 1861 AS A GENUS OF THE BOTHRIOCEPHALIDAE

BY

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In 1913, Southwell very briefly described from the Indian Siluroids *Ophiocephalus striatus*, *Labeo rohita* and *Wallago attu* a Cestode which, from the characters of the scolex, he identified as *Ophryocotyle bengalensis*, i.e., as one of the Davaineidae. In 1924, I described in some detail the anatomy of two species of Proteocephalids also from Indian Siluroids, viz., *Wallago attu* and *Macrones seenghala*, which I provisionally named *Gangesia wallago* and *G. macrones*, and I contended that the former species was almost certainly identical with Southwell's '*Ophryocotyle*' *bengalensis*. Southwell (1925) admits that my contention was correct, whence it follows that the specific name of my first species, assuming the retention of the genus *Gangesia*, should read *Gangesia bengalensis* (Southwell 1913).

This brief resumé of the history of this species serves to show that external characters, and especially scolex characters, cannot always be depended upon as a guide for the correct allocation of a new species in any modern system of classification. Southwell, however, has apparently not taken this view of the matter since in the communication referred to (1925) he revives an ancient undefined and inadequately-described genus first created by Wedl in 1861, viz., *Tetracampos*, and argues, once more chiefly on the basis of scolex characters, that *Gangesia bengalensis* is a second species of this genus, and that the name *Gangesia* must, therefore, lapse. This assertion that Wedl's species *Tetracampos ciliotheca* from the Nile Siluroid '*Heterobranchus*' *anguillaris* (= *Clarias lazera* according to Boulenger) was a Proteocephalid is very questionable. Wedl's other species (and new genus) *Marsypocephalus rectangulus* was

undoubtedly a Proteocephalid, as I have shown in a forthcoming paper (Woodland 1925), but there is every reason to believe, with La Rue* (1914), that *Tetracampus ciliotheca* was a Bothriocephalid, and I propose to give the reasons for that belief, but before doing so, it will be as well to state the evidence offered by Southwell in favour of *Tetracampus* belonging to the Proteocephalidae. This evidence, when examined, appears to consist solely of the general statement that 'the adult cestode parasites most common in fresh-water fishes belong to the genus *Proteocephalus*,' and the very superficial resemblance of Wedl's drawing of the scolex of *Tetracampus ciliotheca* to the scolex of *Gangesia bengalensis* (!). As regards the general statement, this is of course true enough, but Southwell omits to mention the fact that Bothriocephalids are also sometimes to be found in fresh-water fishes, and that at least one, and a very well-known one, viz., *Polyonchobothrium polypteri*, is to be found in a fresh-water fish from the Nile, viz., *Polypterus bichir*. I have also recently described (Woodland 1925) a new species of *Clestobothrium*—*C. clarias*—from a Nile Siluroid, *Clarias anguillaris*. As regards Southwell's comparison of Wedl's drawing of the scolex of *Tetracampus ciliotheca* with the scolex of *Gangesia bengalensis*, I may point out that the hooks of the two scolices are very different in form, and that whereas those of *Tetracampus* are in four groups and vary in size, those of *Gangesia* form a single complete circle and are of the same size, and that Southwell's remark that 'it is impossible to decide from Wedl's figure and descriptions,' whether Wedl's four 'Lappen' ('Jeder Lappen besteht aus einem dünnwandigen, contractilen Parenchym und ragt an der Aussenseite des Kopfes als eine platte Scheibe hervor . . . Nach vorne sind diese Hautlappen (Bothridien van Beneden) näher an einander gerückt und umkreisen eine kuppelförmig hervorragende, bewaffnete Papille.') are 'really outgrowths from the head or whether they are true acetabula' is certainly no justification for his implied assumption that they are outgrowths which bear acetabula, such as exist in Proteocephalids. The foregoing constitutes the whole of the actual evidence offered by Southwell in support of his contention, though in further support of his view he has gone so far as to conclude that Wedl erred in

* *Tetracampus ciliotheca*, 'because of its ventral genital pore, ciliated embryo and two bothria, evidently belongs to the order Pseudophyllidea.' (La Rue.)

describing the genital openings as being situated on the ventral surface.

A careful examination of Wedl's figures and description affords, I think, decisive evidence that *Tetracampos ciliotheca* was a Bothrio-

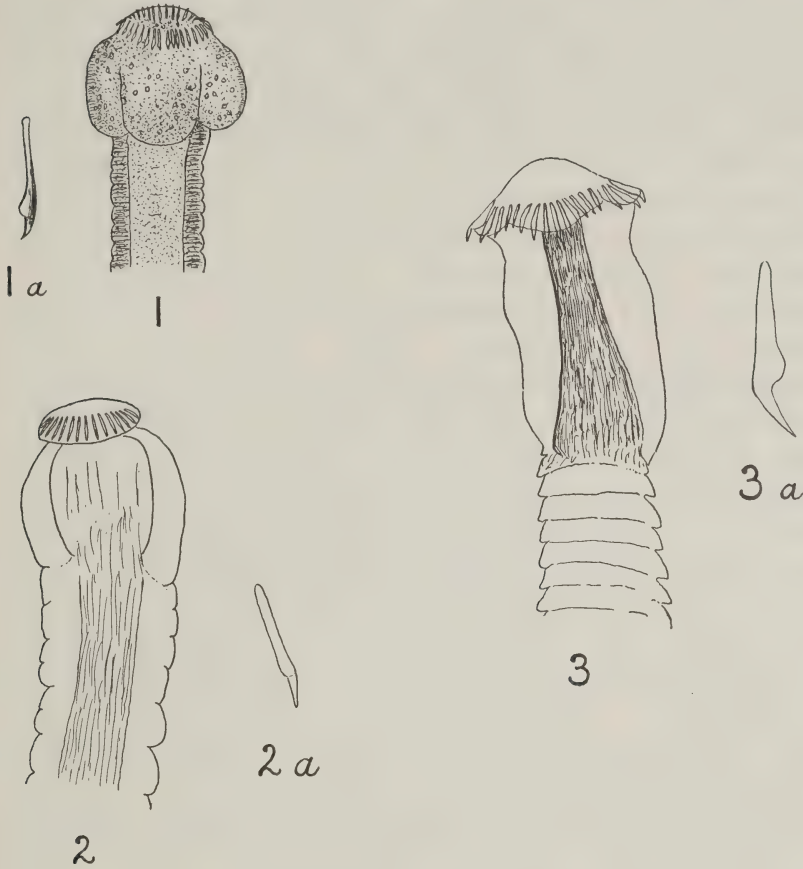


FIG. 1. Approximate copy of Wedl's figure of *Tetracampos ciliotheca*. Magnification about 100.

FIG. 1A. Approximate copy of Wedl's figure of a hook on the scolex of *T. ciliotheca*. Magnification unknown.

FIG. 2. Contracted scolex of *Clestobotrium clarias* Woodland. $\times 87.5$.

FIG. 2A. Hook from scolex of *C. clarias*. $\times 395$.

FIG. 3. Scolex of *Polyonchobotrium polypteri* Leydig. $\times 56$.

FIG. 3A. Hook of scolex of *P. polypteri*. $\times 180$.

cephalid. The hooks are very similar in form, number and arrangement to the hooks found on the crown of *Polyonchobotrium polypteri* (cf. figs. 1 and 3). In this latter species (fig. 3), as in *Tetracampos ciliotheca*, the hooks are arranged in four groups. In each group

in *T. ciliotheca* the number of hooks is usually nine ('of which the longest odd one is in the middle and the shortest pair on the outer side of each group'), while in *P. polypteri* the number varies between six and eight (Klaptocz 1906), and the hooks vary in size and in the position of the longer and shorter in each group, as in *Tetracampos*. In both species the general shape of the scolex is similar save that in *T. ciliotheca* the part below the crown of hooks is much shorter. This shortness is either natural and peculiar to the species or the drawing represents an unusually contracted specimen, similar to that which I have figured (fig. 2) for *Clestobothrium clarias*. This fig. 2 is a true representation* of a contracted scolex of *Clestobothrium clarias* (though the normal scolex is much more elongated—Woodland 1925†), and the general similarity between this representation and Wedl's figure of *T. ciliotheca* affords an explanation of all the general features shown in the latter. Wedl's species cannot be *Clestobothrium clarias* because in this latter the hooks are arranged in a complete circle, and are all of the same size, so markedly differing from the hooks of Wedl's species; neither can Wedl's species be identical with *Polyonchobothrium polypteri* because of the different sizes of the worms, among other reasons, but there is every reason to believe that Wedl's *T. ciliotheca* is a Bothriocephalid of about the same size as *Clestobothrium clarias* (my largest specimen of which measures 14.5 mm.; *T. ciliotheca* measured 10-15 mm. in length), but with the hooks similar to those of *P. polypteri* and possibly a shorter scolex. I have already quoted Wedl's description of the four scolex 'Lappen,' which are evidently the four walls bordering the bothrial or sucking grooves. Other typically Bothriocephalid features of *T. ciliotheca* are the shape of the anterior proglottids, the ventral position of the genital apertures (so conspicuous in these forms, even with an imperfect technique) and the ciliated embryophores enclosing the hexacanth embryos.

I conclude, therefore, that Southwell is mistaken in supposing that Wedl's genus *Tetracampos* has any connection with *Gangesia bengalensis* and *G. macrones*.

As regards Southwell's remarks on the systematic position of the Proteocephalidae this, of course, is a disputed subject, but I may

* As Dr. C. M. Wenyon can testify.

† This paper will provide my reason for including this species in the genus *Clestobothrium*.

say that for me the possession of lateral vitelline strands and of ventral uterine pores affords two very good reasons for relegating the family to the Tetrephyllidea, and that, with me, scolex characters count for very little, though even in this connection, Southwell appears to ignore the lobes upon which the suckers in this family are usually borne (*vide* Beddard 1913, pp. 8, 11, 12 e.g.).

I wish to acknowledge my indebtedness to Dr. H. A. Baylis for the kind gift of a number of specimens of *Polyonchobothrium polypteri*, and to Miss I. M. Bellis for assistance in connection with the literature.

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